Adaptive and unequal probability survey designs for monitoring animal and plant distributions

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Surveying rare plants or animals can be challenging because most of the time the rare species is not where you are looking. Searching can continue for days and nothing is found. Adaptive and unequal probability sampling designs are appealing when populations are rare and clustered because survey effort can be targeted to subareas of high interest. For example, higher density subareas are usually of more interest than lower density areas. With adaptive allocation the targeting of survey effort can be implemented during the survey as new information becomes available. There are many different adaptive and unequal probability sampling designs. With some elegant statistics and simple survey design ideas, searching for a rare species can be fruitful.

In this presentation I will introduce and discuss some recent developments in this field of research. I will also introduce some case studies where we have used adaptive and unequal probability sampling for large-scale surveys of very rare populations.

Presenter Profile:
Professor Jennifer Brown is Head of the Mathematics and Statistics Department at University of Canterbury. She is the current president of the NZ Statistical Association. Jennifer's research interests are in environmental statistics and survey design. She is currently working with colleagues in designing long term environmental monitoring surveys in NZ, USA, the Middle East and Europe. She has over 50 referred publications in applied statistics.